

STREAM: Columbet Creek
DRAINAGE: Jarbidge River (Idaho)
STATE WATER CODE: 1084
GAWS COMPUTER NO.: 170501,05,155,035,020
SURVEY DATES: July 29, 1992
REPORT DATE: May 13, 1993
WRITTEN BY: Gary Lee Johnson

SURVEY METHODOLOGY: The U.S. Forest Service Region 4, Level III Fisheries Habitat Survey Method (March, 1989) was utilized at two Sample Sites (SS) between the Forest Boundary and the headwater forks. Each SS was preplotted on the U.S. Geological Survey 7.5 min. topographic map of the area. The Station that was preplotted at the Forest Service Boundary was dry and hence, no survey work was completed at that site.

The first 100 ft. at the middle and upper SS was sampled for fish using a one-pass effort with a Dirigo backpack electroshocker. Aquatic invertebrate types and relative abundance were assessed following random stream and substrate inspection at each SS. Habitat transects were placed 50 ft. apart. Stream discharge was calculated for each SS using timed float, velocity estimates and water width and depth measurements over a 1m length of uniform stream.

LAND OWNERSHIP AND ACCESS: Columbet Creek heads on the Jarbidge District of the Humboldt National Forest. There is a 0.4 mi. length of stream channel depicted on land status maps as private land within the Forest presumably, belonging the Buck Creek Ranch. A fenceline separates the 0.6 mi. of stream channel located above the Forest Boundary from the Forest portion of stream above the fenceline. Public access to the Forest portion of stream is possible to one crossing located 0.4 mi. above the Forest Boundary from one of several roads traversing the Diamond A Desert which is a composite of Bureau of Land Management Land and Buck Creek private rangeland. Below the Forest Boundary, the stream channel continues for 7.0 mi. in Nevada and 6.5 mi. in Idaho before entering the Jarbidge River. Stream ownership is comprised of approximately 1.8 mi. (11.5 %) Forest; 5.2 mi. (33.1 %) private; and 8.7 mi. (55.4 %) BLM (administered out of Idaho).

WATERSHED DESCRIPTION: Columbet Creek flows northeasterly from a 1.3 sq. mi. drainage within the Humboldt National Forest. Basin elevation ranges from 8277 ft. at the head of the basin to 6780 ft. where Columbet Creek leaves the Forest. The confluence of Columbet Creek and Fawn Creek is below the Forest at the 6320 ft. elevation. Valley form on the Forest ranged from a low V-shape wherein, valley

sideslopes averaged 25.0 % (SS-1), to a moderate V-shape with sideslopes averaging 46.5 % (SS-2). The valley bottom width ranged from 26 ft. at SS-1 to 46 ft. at SS-2. Parent geology of the upper drainage is described as intrusive granitic and dioritic rocks whereas, off the Forest mostly basaltic volcanic rocks are present (One-million Scale Geologic Map of Nevada, 1977).

Upland vegetation within the drainage consisted primarily of mountain shrubs dominated by sagebrush and aspen with an understory of grass and forbs except, above SS-2 where fir trees become more dominant.

WATER STATUS: Columbet Creek was a losing stream that began from a spring source located at 7400 ft. and had a measured discharge of 0.08 cfs at SS-2 and only 0.01 cfs at SS-1. The channel was completely dry at the Forest Boundary. The Snake River drainage basin was only 26 % of average snow water content on May 1, 1992 (Soil Conservation Service snow survey data).

Stream temperature ranged from a low reading of 44°F at the spring source to an afternoon reading of 64°F at SS-1. Between the spring and SS-1 is only 1.2 mi. The temperature at was 57°F at SS-2, located just 0.4 mi. downstream of the spring source. The stream was recorded as clear and at a low flow stage at both SS. The mean water width was 1.8 ft. at S-1 and 4.1 ft. at SS-2. Mean width to depth ratios were 45 and 59 at SS-1 and SS-2, respectively. Maximum stream depth at SS-1 and SS-2 were 1.2 in. and 4.3 in., respectively. Measured water chemistry parameters and values were as follows:

Alkalinity	- 154.1 mg/l
Hardness	- 205.4 mg/l
D.O.	- 8.0 mg/l
CO ²	- 35.0 mg/l
pH	- 8.5

The high carbon dioxide reading seems unusual/suspicious considering the normal alkalinity and dissolved oxygen readings. Values above the normal of 2.0 mg/l may indicate pollution from organic waste¹. There was cow manure seen in the stream at SS-1 where water samples for chemical analyses were conducted.

STREAM HABITAT CONDITION INDEX (HCI): The overall, stream HCI was 66.3 percent of optimum or "fair". The lowest rated individual HCI parameter was pool structure wherein, the mean rating was 0.0 % of optimum at SS-2. Several quality pools were noted within the fish population sample area at SS-2 and so the area was not really, without pools of a size to be considered of a quality type. The

¹ Leitritz, E. and R. C. Lewis. Trout and Salmon Culture (Hatchery Methods). California Department of Fish and Game. Fish Bulletin 164, 1976, p.13.

quality pools at SS-1 were classed as such only on the basis of the area they encompassed. These pools were so shallow, they would have been very poor rearing habitat for trout. Bank vegetative stability percent of optimum averaged 65.0 % of optimum and was the second lowest rated HCI parameter. Mean ratings for bank soil stability and bank cover percent of optimum were also rated "fair".

STREAM CHANNEL TYPE AND STABILITY: The Forest portion of stream was characterized by a gradient that ranged from 3.5 % at SS-1 to 7.0 % at SS-2. The streambottom was dominated by gravel and finer material. Some rubble and boulders were present at the upper SS. An A4 channel type dominated the Forest portion of stream. Stream channel stability evaluations both rated "fair" with a stream average of 92.

RIPARIAN CONDITIONS: Aspen and willow/currant dominated riparian overstory vegetation at both SS. Woods rose also had a presence at both SS. Fir trees were present at the upper elevation site. Grass and forbs provided the understory community. Riparian habitat condition was rated "poor" at SS-2 and "fair" at SS-1. The lowest scored riparian criteria was in both cases, density of shrubs, wherein, densities were < 30 % of the riparian area. Both understory and aspen trees had been moderately-heavily utilized by cattle in the drainage thus, resulting in low scores on the riparian scorecard. Increaser understory plants were dominant and severe streambank compaction was noted at SS-1 where ground cover was estimated at less < 60 %. Stream shade canopy averaged 100 % at SS-1 and 73.5 % at SS-2. Riparian width at both sites was 75 ft.

HABITAT VULNERABILITY: The Index of Habitat Vulnerability (HVI) to management activities was "moderate" at both SS. Streambank sensitivity ratings as determined from the combined stream channel stability scores for upperbank vegetative protection and lowerbank rock content ranged from a "high" score of 16 at SS-2 to a "high" sensitivity rating of 20 at SS-1. A score of >13 indicates that one season of moderate livestock grazing can result in damaged streambanks. Ungulate streambank damage ratings indicated "moderate" (35.0 - 47.5 %) ungulate damage. Average undercut streambank frequency at habitat transect sites was 60.0 %. Streambottom embeddedness ratings ranged from "light" to "moderate" and averaged 39.5 %.

FISH POPULATION: No fish were captured or seen in the Forest portion of stream. Inadequate streamflow probably limits the upstream distribution of fish. A 50 ft. length of stream located 1 mi. from the Idaho Stateline was electrofished on August 15, 1974 which resulted in the capture of three fingerling rainbow trout for an average of 312 subcatchable trout per mile. An area located $\frac{1}{4}$ mi. from the Idaho Stateline and another area located about $\frac{1}{2}$ mi. South of the main Diamond A road was electroshocked and no fish were

found. There are no Department of Wildlife fish stocking records to indicate that fish had ever been stocked into Columbet Creek.

AQUATIC FAUNA AND FLORA: Mayflies, caddisflies and planaria were found at both the upper and lower SS. Mayfly larvae were the most abundant macroinvertebrate and there were four different species present. The greatest variety of aquatic invertebrates was found at SS-1 where blackfly larvae, aquatic beetles, and stonefly larvae were also present. There was a trace of a red-stem grass present along the stream margin.

BEAVER STATUS: There was no past or present evidence of beaver activity in the surveyed portion of Columbet Creek. Considering the low density of willow, beaver would be dependent on aspen which is currently being browsed "moderately-heavy" by ungulates.

CONCLUSIONS

STREAM'S IMPORTANCE: Columbet Creek may continue to support a limited wild rainbow/redband trout population downstream of the Humboldt National Forest.

ANGLER USE: Columbet Creek annual angler use for the period 1981-1990 averaged 14.2 angler days use.

ISSUES AND CONCERNS: The Forest portion of stream is receiving excessive livestock use that is damaging streambanks, and preventing optimum riparian conditions.

RECOMMENDATION: The Buck Creek C&H Allotment management should be revised to allow for improvement of riparian and stream conditions.

The portion of Columbet Creek below the Forest Boundary could be surveyed to ascertain stream conditions and status of the trout.

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